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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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HARRINGTON & SMITH, LLP 4 RESEARCH DRIVE SHELTON, CT 06484-6212			PIZIALI, JEFFREY J	
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			2629	

DATE MAILED: 09/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/714,146	Applicant(s) DOE, STEVE	
	Examiner Jeff Piziali	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☒ Claim(s) 1,3-5,13,15 and 21-23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>29 March 2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated (see Page 3, Line 18 of the instant specification). See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.
2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character not mentioned in the description: "V" (see Figures 1-3). Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not

accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "33" has been used to designate both "the cumulative factor" (illustrated between reference numerals 32 and 34) and "the updated cumulative factor" (illustrated between reference numerals 32 and 36 -- see also Page 6, Lines 18-20 of the instant specification). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The abstract of the disclosure is objected to because: The term "Fig. 2" should be removed from page 15, line 13. Correction is required. See MPEP § 608.01(b).

5. The disclosure is objected to because of the following informalities:

Page 5, line 17 should be changed from "electrodes12" to "electrodes 12."

Page 5, line 24 should be changed from "measurement signal 212" to "measurement signal 21₂."

Page 5, line 25 should be changed from "current driver 182" to "current driver 18₂."

Page 8, line 22-23 should be changed from "green pixel 14₂" to "green pixel 14₃."

Page 9, line 32 should be changed from "pixel 13" to "pixel 14."

The statement "I/we claim:" should be removed from page 10, line 19.

Appropriate correction is required.

Claim Objections

6. Claim 1 is objected to because of the following informalities: Line 8 should be changed from "compensation means" to "a compensation means." Appropriate correction is required.

7. Claim 3 is objected to because of the following informalities:

Line 2 should be changed from "comprises a plurality of pixels including" to "comprising the plurality of pixels includes."

Line 7 should be changed from "compensation means" to "a compensation means."

Line 12 should be changed from "the required output" to "the required output of the first pixel of the second type."

Appropriate correction is required.

8. Claim 4 is objected to because of the following informalities:

Line 2 should be changed from "comprises a plurality of pixels including" to "comprising the plurality of pixels includes."

Line 7 should be changed from "compensation means" to "a compensation means."

Line 12 should be changed from "the required output" to "the required output of the respective pixel."

Appropriate correction is required.

9. Claim 5 is objected to because of the following informalities: Line 3 should be changed from "compensation means" to "a compensation means." Appropriate correction is required.

10. Claim 13 is objected to because of the following informalities:

Line 4 should be changed from "compensation means" to "a compensation means."

Line 9 should be changed from "the required output" to "the required output of the respective pixel."

Appropriate correction is required.

11. Claim 15 is objected to because of the following informalities: Line 2 should be changed from "the brightness output" to "a brightness output." Appropriate correction is required.

12. Claim 21 is objected to because of the following informalities:

Line 5 should be changed from "compensation means for receiving a first input indicative of the present" to "a compensation means for receiving a first input indicative of a present."

Line 7 should be changed from "the magnitude" to "a magnitude."

Appropriate correction is required.

13. Claim 22 is objected to because of the following informalities: Lines 1-4 should be changed from "A display arrangement further comprising at least a first sensor for measuring the brightness output of the first pixel, wherein the first input indicative of the present efficiency of the first pixel is an input, from the first sensor" to "A display arrangement comprising at least a first sensor for measuring a brightness output of a first pixel, wherein a first input indicative of a present efficiency of the first pixel is an input from a first sensor." Appropriate correction is required.

14. Claim 23 is objected to because of the following informalities:

Line 1 should be changed from "the output" to "an output."

Lines 4-5 should be changed from "the difference" to "a difference."

Lines 5-6 should be changed from "the expected light" to "an expected light."

Appropriate correction is required.

Claim Rejections - 35 USC § 102

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

16. Claims 1-5, 8, 9, and 12-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Hunter (US 6,441,560 B1).

Regarding claim 1, Hunter discloses a display arrangement [Fig. 3] comprising: a display [Fig. 3; 10] comprising a plurality of pixels [Fig. 3; 20] each of which is arranged to produce a respective output (i.e. pixel light -- see Column 5, Lines 33-52); at least a first light sensor [Fig. 3; 45] for measuring the output of a first one [Fig. 3; upper left illustrated pixel 20, for instance] of the plurality of pixels (see Column 5, Lines 53-59); and compensation means [Fig. 3; 26 & 40 operating in conjunction] for receiving, from the first sensor, a first input [Fig. 3; supplied at the node connecting the drain/source between transistors 26 & 40] indicative of a measured output (i.e. sensed pixel light -- see Column 6, Lines 4-33) of the first pixel and a second input [Fig. 3; 14 supplied to transistor 26] indicative of a required output (i.e. the desired output light level) of the first pixel and for compensating an output control signal [Fig. 3; supplied via transistor 22] provided to the first pixel such that the output of the first pixel is substantially equal to the required output (see Column 6, Lines 34-61).

Regarding claim 2, Hunter discloses a feedback loop (see Column 6, Lines 31-33) including the compensation means [Fig. 3; 26 & 40 operating in conjunction], the first sensor [Fig. 3; 45] for providing the first input [Fig. 3; supplied at the node connecting the drain/source between transistors 26 & 40] to the compensation means, the first pixel [Fig. 3; 20] for providing the second input [Fig. 3; 14 supplied to transistor 26] to the compensation means, and a driver [Fig. 3; 22] for receiving an input from the compensation means and for providing the output control signal [Fig. 3; supplied via transistor 22] to the first pixel (see Column 6, Lines 34-61).

Regarding claim 3, Hunter discloses the display comprises a plurality of pixels [Fig. 3; 20] including at least a first multiplicity of pixels of a first type [Fig. 3; e.g., pixels 20 in the leftmost illustrated column] including the first pixel and a second multiplicity of pixels of a second type [Fig. 3; e.g., pixels 20 in the middle illustrated column], and further comprising: at least a second light sensor [Fig. 3; e.g., top-middle illustrated sensor 45] for measuring the output of a first one of the plurality of pixels of the second type [Fig. 3; e.g., top-middle illustrated pixel 20]; and compensation means [Fig. 3; e.g., top-middle illustrated transistors 26 & 40] for receiving, from the second sensor, a first input [Fig. 3; supplied at the node connecting the drain/source between transistors 26 & 40] indicative of a measured output (i.e. sensed pixel light -- see Column 6, Lines 4-33) of the first pixel of the second type and a second input [Fig. 3; 14 supplied to transistor 26] indicative of a required output (i.e. the desired output light level) of the first pixel of the second type and for compensating an output control signal [Fig. 3; supplied via transistor 22] provided to the first pixel of the second type such that the output of the first pixel of the second type is substantially equal to the required output (see Column 6, Lines 34-61).

Regarding claim 4, Hunter discloses the display comprises a plurality of pixels [Fig. 3; 20] including at least a first multiplicity of pixels of a first type [Fig. 3; e.g., pixels 20 in the leftmost illustrated column] and a second multiplicity of pixels of a second type [Fig. 3; e.g., pixels 20 in the middle illustrated column], and further comprising: at least a first multiplicity of light sensors [Fig. 3; e.g., leftmost illustrated sensors 45], wherein each of the first multiplicity of light sensors is associated with a pixel of the first type; and compensation means [Fig. 3; e.g.,

leftmost illustrated transistors 26 & 40], for each pixel of the first type, for receiving from the light sensor associated with the respective pixel a first input [Fig. 3; supplied at the node connecting the drain/source between transistors 26 & 40] indicative of a measured output (i.e. sensed pixel light -- see Column 6, Lines 4-33) of the respective pixel and a second input [Fig. 3; 14 supplied to transistor 26] indicative of a required output (i.e. the desired output light level) of the respective pixel and for compensating an output control signal [Fig. 3; supplied via transistor 22] provided to the respective pixel such that the output of the respective pixel is substantially equal to the required output (see Column 6, Lines 34-61).

Regarding claim 5, Hunter discloses a feedback loop (see Column 6, Lines 31-33) for each of the first multiplicity of pixels, wherein each feedback loop includes compensation means [Fig. 3; 26 & 40 operating in conjunction], a light sensor [Fig. 3; 45] and a pixel [Fig. 3; 20] of the first type (see Fig. 3; Column 6, Lines 34-61).

Regarding claim 8, Hunter discloses the first pixel has a variable efficiency (see Column 1, Line 62 - Column 2, Line 2).

Regarding claim 9, Hunter discloses the efficiency decreases with use (see Column 1, Line 62 - Column 2, Line 2).

Regarding claim 12, Hunter discloses each of the multiplicity of pixels of the second type do not have associated light sensors (see Fig. 3; Column 7, Lines 20-24 -- wherein each pixel 20 is only associated with a single light sensor 45).

Regarding claim 13, Hunter discloses a plurality of light sensors [Fig. 3; 45], wherein each of the plurality of pixels [Fig. 3; 20] is associated with a light sensor; and compensation means [Fig. 3; 26 & 40 operating in conjunction], for each pixel, for receiving from the light sensor associated with the respective pixel a first input [Fig. 3; supplied at the node connecting the drain/source between transistors 26 & 40] indicative of a measured output (i.e. sensed pixel light -- see Column 6, Lines 4-33) of the respective pixel and a second input [Fig. 3; 14 supplied to transistor 26] indicating a required output (i.e. the desired output light level) of the respective pixel and for compensating an output control signal [Fig. 3; supplied via transistor 22] provided to the respective pixel such that the output of the respective pixel is substantially equal to the required output (see Column 6, Lines 34-61).

Regarding claim 14, Hunter discloses the compensated output control signal [Fig. 3; supplied via transistor 22] corresponds to an output control signal multiplied by the ratio of the required output (i.e. the desired output light level) of the first pixel [Fig. 3; 20] to the output of the first pixel in response to the output control signal (see Column 6, Lines 4-33 -- wherein the applied photocurrent eventually achieves an equilibrium state for each pixel's desired light output level).

Regarding claim 15, Hunter discloses the first light sensor measures the brightness output of the first pixel (see Column 6, Lines 19-26).

Regarding claim 16, Hunter discloses the first light sensor is integrated into the display (see Fig. 3; Column 5, Lines 33-59).

Regarding claim 17, Hunter discloses the first light sensor is positioned adjacent the first pixel (see Fig. 3; Column 5, Lines 33-59).

Regarding claim 18, Hunter discloses a light shield for the first light sensor is integrated in the display (see Column 7, Lines 20-24).

Regarding claim 19, Hunter discloses the compensation means is integrated into the display (see Fig. 3; Column 5, Lines 33-59).

Regarding claim 20, Hunter discloses the display is an organic emissive display (see Column 1, Lines 5-36).

Regarding claim 21, Hunter discloses a display arrangement [Fig. 3] comprising: a display [Fig. 3; 10] comprising a plurality of pixels [Fig. 3; 20] arranged to produce separate brightness outputs (i.e. pixel light levels -- see Column 5, Lines 33-52) from separately received respective drive currents [Fig. 3; current signal 32 supplied via transistor 22] including a first

pixel [Fig. 3; upper left illustrated pixel 20, for instance] (see Column 5, Lines 53-59) having an efficiency that varies with use (see Column 1, Line 62 - Column 2, Line 2); and compensation means [Fig. 3; 26 & 40 operating in conjunction] for receiving a first input [Fig. 3; supplied at the node connecting the drain/source between transistors 26 & 40] indicative of the present efficiency (i.e. sensed pixel light -- see Column 6, Lines 4-33) of the first pixel and a second input [Fig. 3; 14 supplied to transistor 26] indicative of a required brightness output (i.e. the desired output light level) of the first pixel and for compensating the magnitude of a first drive current [Fig. 3; supplied via transistor 22] provided to the first pixel such that the brightness output of the first pixel is substantially equal to the required brightness output (see Column 6, Lines 34-61).

Regarding claim 22, Hunter discloses a display arrangement [Fig. 3] further comprising at least a first sensor [Fig. 3; 45] for measuring the brightness output of the first pixel [Fig. 3; 20], wherein the first input [Fig. 3; supplied at the node connecting the drain/source between transistors 26 & 40] indicative of the present efficiency (i.e. sensed pixel light -- see Column 6, Lines 4-33) of the first pixel is an input [Fig. 3; supplied at the node connecting the drain/source between transistors 26 & 40], from the first sensor, indicative of a contemporaneously measured brightness output of the first pixel (see Column 6, Lines 34-61).

Regarding claim 23, Hunter discloses a method of controlling the output of a display [Fig. 3; 10] comprising: providing an output control signal [Fig. 3; supplied via transistor 22] to a first pixel [Fig. 3; 20] of the display; measuring [Fig. 3; via sensor 45] light (i.e. sensed pixel

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light -- see Column 6, Lines 4-33) output from the first pixel; and compensating [Fig. 3; via transistors 26 & 40 operating in conjunction] the output control signal provided to the first pixel to reduce the difference between the measured light output of the first pixel and the expected light output of the first pixel (see Column 6, Lines 4-33 -- wherein the applied photocurrent eventually achieves an equilibrium state for each pixel's desired/expected light output level).

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. Claims 6, 7, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hunter (US 6,441,560 B1) in view of Cok (US 2002/0171611 A1).

Regarding claim 6, although it's arguable that each separate and distinct pixel [Fig. 3; 20] in Hunter's active matrix electroluminescent display inherently must comprise "different" (i.e. not shared) photo-emissive materials; Hunter does not expressly disclose the pixels of the first and second type comprise different types of photo-emissive materials.

However, Cok does disclose a plurality of pixels [Fig. 4; 15-17] of first [e.g., red elements] and second type [e.g., blue elements] (see Pages 1-2, Paragraphs 14-15) comprising different photo-emissive materials (see Page 1, Paragraphs 2-3).

Hunter and Cok are analogous art, because they are from the shared inventive field of compensating, via light sensor arrays, for the aging degradation effects of organic light emitting

diode display devices. Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to use Cok's color pixel materials to form Hunter's pixels, so as to provide a display device that automatically maintains both image brightness and a consistent color balance (see Cok: Pages 1-2, Paragraph 15).

Regarding claim 7, Cok further discloses the pixels of the first type emit red or blue colored light (see Page 1, Paragraphs 2-3).

Regarding claim 10, Cok further discloses pixels of the first type and the pixels of the second type have differently variable efficiencies (see Page 1, Paragraphs 2-3 -- i.e. color dependent efficiency changes).

Regarding claim 11, Cok further discloses the differently variable efficiencies decrease at different rates with use (see Page 1, Paragraphs 2-3 and Page 2, Paragraph 15).

Conclusion

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Routley et al (US 2006/0038758 A1), Cottone et al (US 2003/0025688 A1), Yamazaki et al (US 7,068,246 B2), Cok et al (US 7,064,733 B2), Anderson et al (US 7,061,480 B2), Brabander et al (US 6,950,098 B2), Debiez et al (US 6,774,893 B2), Yamazaki et al (US 6,747,638 B2), Cok et al (US 6,717,560 B2), Shannon et al (US 6,693,610 B2), Shannon et al (US 6,542,138 B1), Young et al (US 6,489,631 B2), Fan (US 6,473,065 B1), Holub et al (US

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6,459,425 B1), Shen et al (US 6,414,661 B1), Gleason (US 6,392,617 B1), Yano et al (US 6,317,138 B1), Greene et al (US 6,271,825 B1), Ogawa et al (US 6,243,069 B1), Wei et al (US 5,929,845 A), Jueliger (US 5,490,005 A), and Eaton et al (US 5,157,525 A) are cited to further evidence the state of the art pertaining to display arrangements.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Piziali whose telephone number is (571) 272-7678. The examiner can normally be reached on Monday - Friday (6:30AM - 3PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (571) 272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Jeff Piziali
11 September 2006